

REMARKS/ARGUMENTS

Claims 1-3, 5-10, 12, 15-16 and 18-23 remain in this application. Claims 5, 15, 21 and 22 are withdrawn from consideration. Claims 4, 11, 13-14 and 17 have been cancelled without prejudice.

The Examiner is thanked for the thorough examination of the present application. Applicants assert that the remaining claims are patentable for at least the reasons set forth herein.

Response to the claim rejection under 35 USC 112:

Claims 1-3, 5-10, 12, 15, 16 and 18-23 are rejected under 35 USC 112, first paragraph. The rejection respectfully is traversed.

The Examiner states that the specification fails to comply with the written description requirement. The Applicants respectfully disagree.

The Examiner takes the position on pages 2-3 of the Office Action that the limitation of calculating a “subtraction” between first and second differences of frequency responses is new matter. The Applicants respectfully disagree. Please refer on page 7 of the originally filed specification, to the following eq. (1-3):

$$-\frac{2\pi\hat{\epsilon}_n}{N} = 2\pi\hat{\Delta}_n \frac{N + N_{GI}}{N} = \frac{2}{K(K-1)} \cdot \sum_{\substack{k,l=\text{pilot index} \\ (k \neq l)}} \left(\frac{\Delta\hat{\theta}_{n,k} - \Delta\hat{\theta}_{n,l}}{k-l} \right) \quad (1-3)$$

In eq. (1-3), the term $\Delta\hat{\theta}_{n,k}$ supports the first difference in claim 1, another term $\Delta\hat{\theta}_{n,l}$ supports the second difference in claim 1; and the operation $\Delta\hat{\theta}_{n,k} - \Delta\hat{\theta}_{n,l}$ supports the subtraction between the first and second differences of frequency responses recited in claim 1. Therefore, the limitation of calculating a “subtraction” between first and second differences of frequency responses in claim 1 does not introduce any new matter and the rejection under 35 USC 112, first paragraph of claim 1 should be withdrawn. Similarly, the rejection under 35 USC 112, first paragraph of claims 2-3, 5-10, 12, 15, 16 and 18-23 should also be withdrawn because no new matter is introduced.

Response to the 35 U.S.C. § 103(a) rejections:

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Imamura* (U.S. Patent No. 6862262, hereinafter *Imamura*) in view of *Ito et al.* (U.S. Pub. No. 2003/0128660, hereafter "*Ito*"). Applicants respectfully request that the rejection be withdrawn, as Applicants invented the claimed embodiments prior to the filing date of *Ito*. In this regard, Applicants submit herewith a declaration by the inventors (pursuant to 37 CFR 1.131) setting out the salient facts to establish this prior invention date. Therefore, the Examiner fails to establish prima facie obviousness because *Ito* is disqualified as a reference.

With respect to the attachments to the accompanying declaration, many of the documents are in Chinese. If necessary, the Applicants will provide translations of the attachments. However, 37 CFR 1.131 does not state that all supporting attachments must be in English, nor does it state that the supporting attachments must independently verify the statements set forth in the declaration. 37 CFR merely requires that a declaration under 37 CFR 1.131 be accompanied by Exhibits that support the statements made in the declaration. In this regard, the Applicants are all fluent in Chinese and understand the contents of the Chinese language attachments, and those attachments have been referenced to properly support the statements that are set out in the declaration. In short, Applicants submit that the accompanying declaration under 37 CFR 1.131 is sufficient to have *Ito* withdrawn from consideration, and therefore the outstanding rejections withdrawn.

Still further, Applicants have carefully studied the Examiner's opinion, the cited references *Imamura*, and found that *Imamura* fails to teach or suggest the claim 1. Claim 1 (shown in a clear version) recites:

- An apparatus for sampling timing compensation at a receiver of a communication system, wherein each of a first and a second symbol signals comprises two pilot signals transmitted via a first and a second pilot subchannels respectively, and the first and the second pilot subchannels comprise a first and a second pilot indexes respectively, the apparatus comprising:
 - a pilot subchannel estimator for generating a first frequency responses of two of the pilot signals transmitted over the first pilot subchannel and generating second frequency responses of the other two of the pilot signals transmitted over the second pilot subchannel;
 - a timing offset estimator, coupled to the pilot subchannel estimator, for **calculating a timing offset according to** a first difference between the first frequency responses of the first and second symbol signals, a second difference between the second frequency responses of the first and second symbol signals and **a subtraction between the first and second differences**; and

a phase rotator, coupled to the timing offset estimator, for performing sampling timing compensation according to a phase rotation corresponding to the timing offset.

(*Emphasis added*)

It is clearly shown that the claimed invention utilizes not only the first and the second differences calculated according to the first and the second frequency responses respectively, but also **the subtraction between the first and the second differences** to obtain the timing offset. *Imamura*, however, at most teaches a phase error calculation circuit 204 for calculating a residual phase error with high estimation accuracy using the residual phase error of each subcarrier calculated by differential detection (*Imamura: Col. 5, lines 59-63*), but is silent on “calculating a timing offset according to **a subtraction between a first and a second differences** which are calculated according to first and second frequency responses respectively”. Although *Imamura* discloses dividers 305 and 306 and normalization circuits 704, 707 and 1204, each of these circuits just normalizes **ONE added output** to set its amplitude to 1 (*Imamura: Col. 6, lines 18-21; Col. 8, lines 6-8; Col. 8, lines 16-18; Col. 11, lines 64-66*) but teaches nothing about calculating a timing offset according to **a subtraction between a first and a second difference**. As discussed above, *Ito* fails to qualify as a reference in rejection of Claim 1 and consequently fails to compensate for the deficiency of *Imamura*. Therefore, the claim 1 is respectfully submitted to be patentable over *the prior art*. Since claims 2-3 are dependent upon claim 1, if claim 1 is found to be allowable, so should the dependent claims.

Claims 6, 10-12, 16, 18, 19, 20 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Imamura* in view of *Ito* and *Singh et al.* (U.S. Patent No. 7139320, hereafter “*Singh*”). This rejection is respectfully traversed.

As explained above, *Imamura* in view of *Ito* at least fail to disclose “calculating a timing offset according to **a subtraction between a first and a second differences**” as claimed in independent claims 1, 10, 18 and 23. *Singh* does not compensate for the deficiencies of *Imamura* and *Ito*. Therefore, claims 1, 10, 18 and 23 are patentable over *Imamura* in view of *Ito* and *Singh*. Since claims 6, 11-12, 16, 19 and 20 dependent upon claims 1, 10, 18 and 23 respectively, if claims 1, 10, 18 and 23 are found to be allowable, so should the dependent claims.

Claims 7, 8 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Imamura* in view of *Ito*, *Singh* and *National* (“Application of the ADC1210 CMOS A/D

Converter”; National Semiconductor Application Note 245, April 1986). Since claims 7, 8 and 17 are dependent upon claims 1 and 10 respectively and *National* nowhere teaches or suggest “calculating a timing offset according to a subtraction between a first and a second differences”, applicants therefore respectfully assert that claims 7, 8 and 10 are patentable because of at least the same reasons placing claims 1 and 10 allowable.

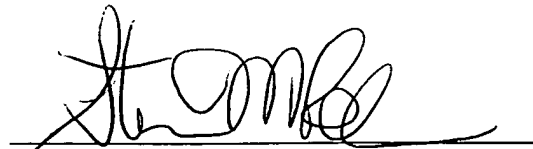
Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Imamura* in view of *Ito, Singh* and *Matheus et al.* (US Pat. No. 7009932, hereinafter “*Matheus*”). Since claim 9 is dependent upon claim 1 and *Matheus* nowhere teaches or suggests “calculating a timing offset according to a subtraction between a first and a second difference”, applicants therefore respectfully assert that claim 9 is patentable because of at least the same reasons placing claim 1 allowable.

Conclusion:

In view of the above remarks/arguments and amendments set forth above, applicants respectfully request allowance of claims 1-3, 6-10, 12, 16, 18-20 and 23. If the Examiner believes that a telephone interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

The amount of \$940.00 is attached as payment of the one-month extension fee (\$130.00) and the RCE fee (\$810.00), by way of credit card form PTO-2038. Should the remittance be accidentally missing or insufficient, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



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Date

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